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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,251	10/24/2003	Thomas A. Knecht	WC0152 (5703 P 005)	1388
7590 02/09/2006			EXAMINER	
Steven Weseman CTS Corporation 171 Covington Drive Bloomington, IL 60108			NGUYEN, SIMON	
			ART UNIT	PAPER NUMBER
			2685	

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/693,251	Applicant(s) KNECHT ET AL.	
	Examiner SIMON D. NGUYEN	Art Unit 2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 42 and 44 are rejected under 35 U.S.C. 102(e) as being anticipated by Clark (6,825,734).

Regarding claim 42, Clark discloses a method of fabricating a frequency translator circuit (figs.1-5) having a resonator (105) coupled to at least one passive device (for example, resistors or capacitors or inductors (column 2 lines 32-45, 54-67, column 3 lines 1-8, column 4 lines 23-39, column 7 lines 1-20, column 10 lines 15-24) and an electrically conductive lead shorting-circuiting at least a portion of said passive device (for example, electrically connected to via 401 with short-to-ground termination (figs.2, 4), the method comprising the steps of: attached the resonator to a circuit board with compliant material positioned between the resonator and the circuit board (figs.4a-d, column 8 line 58 to column 9 line 24); providing a reference frequency to the frequency translator circuit (column 1 line 32, column 2 line 21 or Fin of fig.5); observing an output frequency generated by the frequency translator circuit; severing

Art Unit: 2685

the electrically conductive lead; and observing the output frequency generated by the frequency translator circuit after the conductive lead has been severed (an output is four times of an input) (column 9 line 50 to column 10 line 15).

Regarding claim 44, Clark further discloses the complaint material is metal (column 3 line 55, column 4 lines 13, 35, column 5 line 55, column 8 line 20).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 43, 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark (6,825,734) in view of Mucke et al. (6,268,778).

Regarding claims 43, 45-47, Clark discloses the complaint material used in a circuit board as dielectric insulating material with electrically conducting material layers (abstract). However, Clark does not specifically disclose the material is silicon.

Mucke discloses an integrated PLL having a resonator in a circuit board, wherein the integrated circuit board comprising silicon and metal materials (column 8 lines 53-67, column 10 line 6, column 18 line 60 to column 19 line 13). It should be noted that the modified Clark does not specifically disclose the complaint material having a Young's Modulus of less than 1 Gpa, .5Gpa.

Art Unit: 2685

It should be noted that the modified Mucke teaches apparatus and method for building a resonator with less noise and high accuracy. Therefore, it would have been obvious to those skilled in the art, the modified Mucke can use the complaint material having a Young's Modules of less than 1 Gpa, or less than .5 Gpa, which is known to those skilled in the art in order to stabilize of an output signal.

5. Claims 1, 3, 7-21, 23, 27-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark (6,825,734) in view of Thomsen et al. (U.S. 2004/0232995).

Regarding claim 1, Clark discloses a frequency translator (synthesizer or PLL), comprising; a circuit board (figs.1-5); a phase locked loop circuit comprising a phase detector, a divider, and a VCO (fig.5); a resonator (105); a complaint material positioned between the resonator and the circuit board (figs.1-4); an impedance network (column 7 lines 10, 31, 45-47) coupled to the resonator having at least one passive device (capacitors or inductor, or resistor) (column 2 lines 32-45, 54-67, column 3 lines 1-8, column 4 lines 23-39, column 7 lines 1-20, column 10 lines 15-24) with an electrically conductive lead (figs.1-4); and a package containing the circuit board, the PLL, and the conductive lead being severed (fig. 1-5). It should be noted that the resonator in Clark can be a SAW resonator. However, Clark does not specifically disclose so.

In the same filed of invention, Thomsen discloses a resonator comprising a SAW device (11 of figs. 1-2, 303 fig.3). Therefore, it would have been obvious to have Clark, modified by Thomsen to reduce a phase noise in order to improve the frequency output.

Regarding claim 21, this claim is rejected for the same reason as set forth in claims 1 and 42.

Regarding claims 3, 23, these claims are rejected for the same reason as set forth in claim 44.

Regarding claims 7-8, 27-28, Thomsen discloses a non-volatile memory included in a package (paragraphs 40, 58) and a prescaler in a PLL (paragraph 69).

Regarding claims 9-10, 30, Clark discloses the conductive lead and the impedance network are a portion of printed wiring on the circuit board (figs.1-4).

Regarding claims 11-12, 15-18, 31-32, 35-38, Clark discloses capacitors or inductor or resistor used in the resonator integrated circuits as passive devices (column 2 lines 32-45, 54-67, column 3 lines 1-8, column 4 lines 23-39, column 7 lines 1-20, column 10 lines 15-24).

Regarding claims 13, 14, and 33-34, the modified Clark does not specifically disclose the impedance network comprising two passive devices serially connected and comprising five passive devices.

It should be noted that in order to generate a stable with a severed frequency in a frequency synthesizer, the passive devices can be connect either in series or parallel as well to use more passive devices up to 5 or more to match the impedance which is known to those skilled in the art in order to have a stable, meet-requirement frequency.

Regarding claim 19, Clark discloses the package having a though-hole for electrically conduct (figs.2-4).

Regarding claims 20, 29, Clark discloses an output frequency is four times of an input frequency which is an input of 150MHz to an output of 600 MHz (column 9 line 56-67).

Regarding claim 39, see claim 1 rejection.

Regarding claim 40, both Clark and Thomsen discloses the resonator integrated in a PLL circuit board used in an integrated communication device (see figs. 4, 14 of Thomsen).

Art Unit: 2685

6. Claims 2, 4-6, 22, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark (6,825,734) in view of Thomsen et al. (U.S. 2004/0232995) and further in view of Mucke et al. (6,268,778).

Regarding claims 2, 4-6, 22, 24-26, the modified Clark fails to disclose silicon material.

Mucke discloses a synthesizing circuit board made of silicon and metal materials as disclosed in claims 43, 45-47 (see the rejection of claims 43, 45-47). The motivation for combining the modified Clark with Mucke is that it helps stabilizing of an output signal

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Simon Nguyen whose telephone number is (571) 272-7894. The examiner can normally be reached on Monday-Friday from 7:00 AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban, can be reached on (571) 272-7899.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 306-0377.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

600 Dulany, Alexandria, VA 22314

Application/Control Number: 10/693,251
Art Unit: 2685

Page 8

Or faxed to:

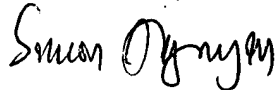
(571) 273-8300 (for formal communications intended for entry)

Hand-delivered response should be brought to Customer Service Window
located at the Randolph Building, 401 Dulany, Alexandria, VA, 22314.

Simon Nguyen

February 6, 2006

SIMON NGUYEN
PRIMARY EXAMINER

A handwritten signature in cursive script that reads "Simon Nguyen".